

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A system for a dental filling material or an implant material, alternatively a system for bonding between a tooth or a bone and a dental filling material and a implant material, respectively, ~~which system comprises a water based hydration liquid and a powdered material, the binder phase of which powdered material essentially consisting of a calcium based cement system, which powdered material has the capacity following saturation with the liquid reacting with the binder phase to hydrate to a chemically bonded ceramic material, characterised in that~~ comprising:

a water based hydration liquid; and

a powdered material, wherein,

said powdered material comprises a binder phase that essentially consists of a calcium based cement system,

said hydration liquid reacts with the binder phase to form a chemically bonded ceramic material upon saturation of said powdered material with said hydration liquid, and

at least one of said powdered material ~~and/or~~ and said hydration liquid comprises water soluble phosphate or a phase that has the capacity to form water soluble phosphate, ~~whereby so~~

that the system ~~exhibits the capacity during hydration to~~ has the capacity to form apatite during hydration of said powdered material.

2. (currently amended) [[A]] The system according to claim 1, ~~characterised in that~~ wherein the system has the capacity to form, during hydration, ~~to form~~ 0.01-30 % by volume apatite in the system.

3. (currently amended) [[A]] The system according to claim 1, ~~characterised in that~~ wherein the system is a bonding system that has the capacity to form, during hydration, ~~to form~~ 0.01-60 % by volume apatite in the system.

4. (currently amended) [[A]] The system according to claim 1, ~~characterised in that the system has a pH of at least 7, preferably 7-12.5 and even more preferred 7-11, preferably by use of a buffering system of phosphates or carbonates e.g~~ wherein the system has a pH of at least 7.

5. (currently amended) [[A]] The system according to claim 1, ~~characterised in that~~ wherein,

the binder phase essentially consists of a fine grain of at least one of  $3\text{CaO}\cdot\text{Al}_2\text{O}_3$ ,  $3\text{CaO}\cdot\text{SiO}_2$ , and  $2\text{CaO}\cdot\text{SiO}_2$ , having a mean particle size of at most 5  $\mu\text{m}$ , and

the hydration liquid comprises phosphoric acid with tricalcium phosphate ~~and/or  $3\text{CaO}\cdot\text{SiO}_2$  and/or and  $2\text{CaO}\cdot\text{SiO}_2$ , preferably having a mean particle size of at most 5  $\mu\text{m}$  and even more preferred at most 1  $\mu\text{m}$ , and in that the hydration liquid comprises phosphoric acid with tricalcium phosphate.~~

6-27. (canceled)

28. (withdrawn-currently amended) An implant material comprising a substrate, ~~characterised in that~~ wherein said substrate comprises a hydrated coating layer (2) of a system according to claim 1.

29. (withdrawn-currently amended) ~~[[An]]~~ The implant material according to claim 28, ~~characterised in that~~ wherein the coating layer (2) exhibits a thickness of 0.5-20  $\mu\text{m}$ , ~~preferably less than 10  $\mu\text{m}$ , and even more preferred 0.5-3  $\mu\text{m}$ .~~

30. (withdrawn-currently amended) ~~[[An]]~~ The implant material according to claim 28, ~~characterised in that~~ wherein,

the coating layer (2) exhibits an outer layer (3) of a powdered material ~~according to any one of claims 6-18~~, on top of it, and

said powdered material comprises water soluble

phosphate or a phase that has the capacity to form water soluble phosphate.

31. (withdrawn-currently amended) [[An]] The implant material according to claim 30, ~~characterised in that wherein~~ the outer layer (3) exhibits a thickness of 0.5-10  $\mu\text{m}$ , ~~preferably less than 5  $\mu\text{m}$ , and even more preferred 0.5-3  $\mu\text{m}$ .~~

32. (withdrawn-currently amended) [[An]] The implant material according to claim 28, ~~characterised in that wherein~~ a crystal size in the layer (2, 3) is 5  $\mu\text{m}$  at the most, ~~preferably less than 1  $\mu\text{m}$ .~~

33. (withdrawn-currently amended) A method of achieving bonding between a tooth or a bone and a dental filling material and an implant material, respectively, ~~which~~ comprising:  
applying a bonding system according to claim 1 as  
dental filling/implant material ~~comprises a chemically bonded ceramic material, characterised in that a bonding system according to claim 1 is used.~~

34. (withdrawn-currently amended) [[A]] The method according to claim 33, ~~characterised in that wherein~~ a powdered material and/or a hydration liquid, is used in the bonding system.

35. (withdrawn-currently amended) [[A]] The method according to claim 33, ~~characterised in that~~ wherein the tooth or bone is pre-treated by etching with an etching agent and/or by mechanical coarsening techniques, ~~micro-blasting e.g.~~

36. (withdrawn-currently amended) [[A]] The method according to claim 35, ~~characterised in that~~ wherein said etching agent comprises a phosphate-containing etching agent, preferably an etching agent in the group that consists of phosphoric acid, hydrophosphoric acid, phosphate buffer and citrates.

37. (withdrawn-currently amended) [[A]] The method according to claim 33, ~~characterised in that~~ wherein the bonding system is applied onto the tooth or bone, preferably by painting or spraying, where after said dental filling/implant material is applied outside said bonding system.

38. (withdrawn-currently amended) [[A]] The method according to claim 37, ~~characterised in that~~ wherein said dental filling/implant material is chosen to be compatible with the bonding system, said dental filling material/implant material ~~preferably~~ comprising a powdered material, the binder phase of which essentially consisting of a calcium based cement system,

which powdered material has the capacity following saturation with a hydration liquid reacting with the binder phase to hydrate to a chemically bonded ceramic material, said powdered material and/or said hydration liquid comprising water soluble phosphate or a phase that has the capacity to form water soluble phosphate, ~~whereby~~ so that the dental filling material/implant material exhibits the capacity during hydration to form apatite.

39. (new) The system according to claim 1, wherein said calcium based cement system has a larger mole content of calcium than of aluminium.

40. (new) The system according to claim 1, wherein, said calcium based cement system is a cement system selected from the group consisting of aluminates, silicates, phosphates, sulphates and combinations thereof.

41. (new) The system according to claim 1, wherein, said water soluble phosphate is an alkali phosphate.

42. (new) The system according to claim 1, wherein, said powder material has a degree of compaction of at least 55 % by volume solid phase.

43. (new) The system according to claim 1, wherein, said hydration liquid has a pH of at least 7.

44. (new) The system according to claim 1, wherein, said hydration liquid comprises at least one of an accelerator and a superplasticizer.

45. (new) The system according to claim 1, wherein, said powder material has a crystal size of at most 5  $\mu\text{m}$ .

46. (new) The system according to claim 1, wherein, the powdered material comprises the water soluble phosphate or the phase that has the capacity to form water soluble phosphate.

47. (new) The system according to claim 46, wherein, said powder material comprises grains of a phosphate-containing phase.

48. (new) The system according to claim 46, wherein, said powder material comprises high-molecular proteins.

49. (new) The system according to claim 46, wherein, said powder material comprises from 0.5 % and up to 10 % of a fluoride-containing phase of non difficultly soluble character.

50. (new) The system according to claim 46, wherein, said powder material comprises carbonate or biologically existing ions that have the capacity to form at least one salt selected from the group consisting of calcite, aragonite, oxalates, lactates, and citrates.

51. (new) The system according to claim 46, wherein, the phosphate or phosphate-forming phase exists as particles that are precoated by a material comprising phosphate or phosphate-containing phase.

52. (new) The system according to claim 46, wherein, the phosphate or phosphate-forming phase exists by the cement system comprising phosphate-containing phase in solid solution in the cement system.

53. (new) The system according to claim 1, wherein, the hydration liquid comprises water soluble phosphate or a phase that has the capacity to form water soluble phosphate.

54. (new) The system according to claim 53, wherein, said water soluble phosphate exists as or has the capacity to be formed in an amount of at least 0.01-5 M.



55. (new) The system according to claim 53, wherein, said hydration liquid is adapted for a bonding system, said water soluble phosphate existing or having the capacity to be formed in an amount of at least 0.01-5 M.

56. (new) The system according to claim 53, wherein, said water soluble phosphate comprises phosphate ions selected from the group consisting of  $\text{PO}_4^{3-}$ ,  $\text{HPO}_4^{2-}$ ,  $\text{H}_2\text{PO}_4^-$ , hydro-ammonium phosphate and other phosphorous-containing ions.

57. (new) The system according to claim 53, wherein, said hydration liquid comprises suspended or emulsified, non hydrated or partially hydrated calcium aluminate cement, for the formation of a basic environment for the apatite.

58. (new) The system according to claim 53, wherein, said hydration liquid comprises carbonate or biologically existing ions that has the capacity to form at least one salt selected from the group consisting of calcite, aragonite, oxalates, lactates, and citrates.

59. (new) The system according to claim 53, wherein, said hydration liquid comprises fluoride ions at a concentration of 0.01-5 M.

60. (new) The system according to claim 1, wherein the system is for an implant material when hydrated to provide a coating layer having thickness of 0.5-20  $\mu\text{m}$ .